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Field Notes

Humanitarian Mine Action and IEDs

by Craig McInally and Hans Risser [Norwegian People's Aid]

Norwegian People's Aid (NPA) has been operational in improvised explosive device (IED) clearance in Hamdaniya, Iraq, since January 2017. Additionally, MAG (Mines Advisory Group) has operated in the same area clearing IEDs since September 2015 and has had operations in many parts of both Iraq and Syria. Other nongovernmental organizations (NGO) clearing IEDs include Handicap International and the Swiss Foundation for Mine Action (FSD). Without question, IED clearance is now an established part of humanitarian mine action (HMA). Yet this does not mean HMA should adopt the full spectrum of IED disposal (IEDD) operations. Rather, NGOs can provide invaluable capacity only within the appropriate humanitarian context.

IEDs on The Battlefield

IEDs have long been a part of the battlefield mix of explosive hazards, from simple, modified munitions to complex, multi-switch devices. In conflicts, these devices are typically neutralized by specialized military and/or police teams. However, not every device is found, so IEDs inevitably end up as a part of the explosive contamination left behind after the shooting stops. Consequently, HMA actors have a long history of dealing with booby-trap scenarios involving modified munitions, such as in the Balkans, or abandoned IEDs, such as in southern Afghanistan. This was generally executed as incidental encounters during unexploded ordnance (UXO) or mine clearance but not the main effort. However, the battlefield is evolving, and HMA must grow with it.

The successes of the *Anti-Personnel Mine Ban Convention* (APMBC) and munition stockpile reduction projects have limited the availability of these weapons to nonstate actors. In the beginning of the insurgency campaigns in Afghanistan and Iraq, IEDs tended to use main charges of unexploded projectiles or other factory-produced ordnance. When the stock of munitions ran out, the bomb makers turned to homemade explosive (HME) for main charges. By manufacturing HME from common precursors such as aluminum, urea, ammonium nitrate, and potassium chlorate, the bombers created a nearly inexhaustible supply chain.



This kerosene heater was modified into an IED that incorporates both a crush necklace and a built-in, anti-lift feature. These devices and others like them are sitting among the rubble inside abandoned homes awaiting returning families.

All photos courtesy of NPA.

IED Proliferation in Iraq and Syria

IED deployment methodologies changed dramatically when ISIS broke out of Syria and swept through a massive swath of Iraq in 2014. IEDs became a main strategic tool in both offense and defense. Using captured factories and machinery, ISIS began making improvised landmines, rockets, mortars, fuses, and grenades—some of which are complete one-off designs—while others are surprisingly decent copies of state-produced munitions. The sheer scale and variety of IED production and deployment is astounding.

Arguably the most popular design with ISIS is the pressure-plate IED (PPIED). Although it looks nothing like a mine, it is commonly deployed with the same tactical intent as a traditional mine.

The PPIED consists of two plates held apart by spacers. When these plates touch from pressure, the circuit is closed, firing an electric detonator. The detonator can be commercial or also improvised. Certainly this is a very simple yet effective device. The main charges are made from just about any available container from fuel jugs to tea kettles, or they can be made by ISIS from industrial pipes, gas cylinders, or other



A typical PPIED with dual pressure plates. The national staff searchers have marked it for the IED specialists to prosecute.



The same PPIED after neutralization. Note the square, white electronic anti-lift device on the left.

repurposed material. Typical net explosive quantity (NEQ) ranges from 6 to 20 kg (13 to 44 lbs), although much larger charges have been found when targeting vehicles. Secondary anti-lift features are common, as are dual pressure plates. If on the surface, even a child's footstep is enough pressure to function the device.

Yet the charges are powerful enough to destroy a truck and kill the occupants. PPIEDs currently encountered in Iraq are generally robust in design and can remain functional for several years. Other improvised mines, which mimic factory-produced mines in form as well as function, use mechanical cocked-striker fuzing, and these may have even longer operational lifespans than electronically-fired systems. ISIS deploys these improvised mines in long, patterned rows to defend against



The rubble from an adjacent IED detonation makes the crush necklace even harder to see.

assault from security forces. Command IEDs can be found interspersed at key points inside the protective row as well.

An anti-personnel mine, as defined by the APMBC and the *Convention on Conventional Weapons* (CCW) Amended Protocol II, is "a munition designed to be placed under, on or near the ground or other surface area and to be exploded by the presence, proximity or contact of a person" intended to "incapacitate, injure or kill one or more persons."^{1,2} The treaty definitions say nothing about the munitions being factory made, meaning a victim-operated (VOIED) placed on the ground or another surface area is an anti-personnel mine under the scope of these definitions, their respective treaties and international humanitarian law.

Another common tactic is to place IEDs inside houses in the perimeter of the village and in large defensible structures such as schools and hospitals. Some of these IEDs are well disguised as seemingly harmless objects. NPA has encountered generators and kerosene heaters repurposed as VOIEDs in several houses. The primary switching is small contact **beads** at intervals of fine copper wire, essentially multiple miniature pressure plates in a row. The commonly used name for this design is **crush necklace** (although many other names are used). These crush necklaces can be several meters long and snake around doors and stairways.

The wires are usually enameled or painted to match concrete and are hard to see. So far, every device of this category that NPA neutralized has also contained at least one secondary switch targeting the clearance agent. Crush necklaces are also found with other types of main charges. When deployed on hard surfaces, the target is personnel, and on soft ground, the target is vehicles.

Security forces conducted clearance as they breached through, but the quality of the clearance is not to international standards and the mapping is nonexistent. The vast

majority of devices remain in situ, especially the massive rows of improvised mines. The precise amount of contamination is not known, but a reasonable estimate is that over 50 percent of communities in the areas liberated from ISIS in Iraq have large-scale IED contamination. While the original target was security forces, today the victims of these IEDs are the displaced people who are returning home to rebuild their lives.

Humanitarian Response

The humanitarian crisis created by these IEDs is hard to fully comprehend. A massive swath of Iraq and Syria was laid waste and booby-trapped. IEDs lurk among the rubble, along roads and power lines, inside abandoned houses and government buildings, and in agricultural fields.

Some groups within the explosive ordnance disposal (EOD) and mine action community have questioned the capability of HMA NGOs to clear IEDs. While some of this is an obvious ploy to corner the market, the question is nevertheless valid and should be discussed openly. Whether NGOs *can* conduct IED clearance effectively has been proven on the ground already. So perhaps the correct discussion is *how* and *why* we are operating. The discussion begins by acknowledging two crucial differences in NGO capacity versus security forces and commercial companies.

First, HMA NGOs are impartial and not in the fight. HMA deployment is non-tactical and engages directly with the affected community. The teams are neither intended nor equipped to deploy full security cordons or engage defensively. Deployment is planned in areas far enough away from the frontline to reduce the probability of being targeted or being caught in an engagement.

Second, NGOs do not use armor, electronic counter measures (ECM), fully remote procedures, and security cordons. Thus active command or time devices fall outside the scope of HMA work. NPA applies a sufficient soak time (period of time observed in order to allow active sensors to run down and timers to expire) to ensure that any lingering fighters have left and that any active timers or power sources have run down. The remaining devices are then considered to be abandoned IED and fall into the HMA realm.

But perhaps even more important than how an HMA NGO deploys in a C-IED role is why. As defined in International Mine Action Standards (IMAS), HMA projects “should reflect fundamental humanitarian principles of neutrality, impartiality, equality and humanity so that mine action is focused on giving support to those who are most vulnerable” (IMAS 1.10).² If operators are going to continue to conduct HMA, the real question is which C-IED tasks are appropriate

for a humanitarian operator. If the clearance task involves an IED that is at play within the active battlefield, humanitarian intervention is inappropriate because it would raise questions regarding the humanitarian principles of neutrality and impartiality. This is not specific to an IED context but equally applies to a classic minefield. A humanitarian mine action operator would never enter into a conflict zone to clear a minefield that one side of the conflict is actively defending or maintaining.

Therefore, if there was ongoing IED deployment or overwatch in an area, it would be inappropriate for a humanitarian operator to intervene as it could, in legal terms, potentially constitute direct participation in the conflict.

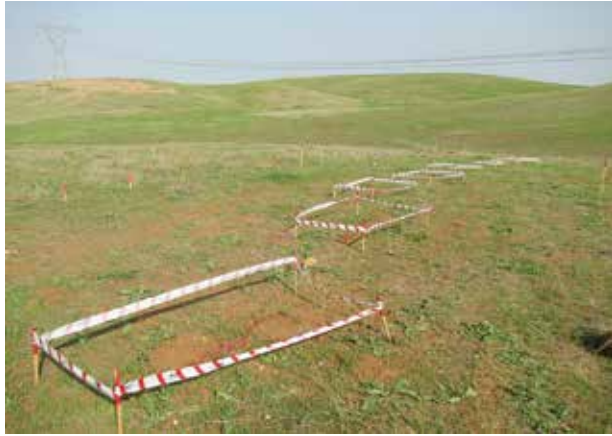
The HMA Role in IED Clearance

For HMA, the most appropriate environment for operations is post-conflict or in a theater where active combat is not taking place. This allows HMA to focus on giving support to those who are most vulnerable and meeting the needs of the civilian population and returnees. Thus, HMA focuses on three main types of clearance with respect to IEDs: hazardous areas, booby-trapped structures, and spot tasks.

Hazardous areas of VOIEDs are improvised minefields, and HMA NGOs are the leading actors in mine clearance and its associated survey and information management (IM). By adapting current best practices in mine clearance, operators can efficiently locate and remove the devices and return the resource back to the community. Like traditional mine clearance, most of the effort is expended in identifying the areas and searching for the devices.

Unlike traditional mine clearance, the improvised nature of the threat requires IEDD-qualified staff to deal with even the most apparently simple device. NGOs and commercial companies both employ former military personnel to provide this capacity. HMA must be vigilant in keeping improvised mine clearance procedures distinct from traditional mine clearance. Like all mine or UXO clearance, the skills of the team and equipment required must be adjusted to the threat posed by the devices.

Structure clearance is done solely by IED-qualified staff. High Risk Search techniques created by military IED operators are employed, but the tools and methods are comparatively low-tech versus proper military teams. Also, given that the intent of HMA is to return land and property back to civilian use, protection of property is even more important within the HMA context, so energetic attacks (disruptors, various water explosives, shaped charges, etc.) are less commonly used. Buildings are selected based on the resource value to the



A row of improvised mines isolated for clearance.

community. For example, NPA has cleared several homes for returnees as well as a large primary school and a large secondary school in an area 20 km (12 mi) from Mosul.

For HMA, the results are all about the human impact, not just square meters. Spot tasks have changed as well. Before the IED proliferation, an unfired round of ammunition was simply picked up and hauled off. Now in countries such as Afghanistan, Iraq, Libya, Syria, or Somalia, the same item must now be evaluated as a potential come-on or IED component. Further, abandoned command or time devices pop up as spot tasks here and there. These are essentially then treated as VOIED in case of secondary switching (with some exceptions such as stuck-fast timer). Of course, drills such as Radio Frequency discipline or wire control are still employed—just without the worry of an active triggerman or a running timer.

Comparative Strengths and Weaknesses

Security forces, commercial companies, and NGOs each have a different role to play in the effort to remove explosive hazards. In some cases, NGOs are not suitable at all. In other cases, NGOs are the best equipped to deliver a solution. In fact, NPA proposes that the three sectors of IED response, when working together and sharing information, can achieve synergy. What is important is to understand our various roles. As previously mentioned, NGOs cannot, or at least should not, do front-line clearance or active command or time devices. These scenarios are appropriate for security forces and certain specialized commercial companies.

IED operators take years to develop from scratch, so fast response requires a large amount of expat skill sets imported to the mission, and commercial companies can more easily recruit these operators due to more lucrative compensation. NGOs are unlikely to win funding for clearance of private commercial property or military bases, whereas commercial companies are well suited for these tasks.

Where HMA stands out is in the long grind of survey and clearance. HMA developed the land release and toolbox concepts. Land release is a process that coordinates certain types of survey with clearance and puts the emphasis on survey over clearance in order to get hazard areas released efficiently and safely (see IMAS 07.11 for more).

The toolbox concept is a strategy for utilizing mechanical, manual, and animal systems together to optimize quality and productivity. Survey of the region and clearance of hazardous areas is a slow process even in the best conditions. Time is on the side of NGOs. Taking on the large, complex area clearance tasks frees up clearance teams from security forces to get back in the fight and do what they do best.

Beyond survey and clearance, HMA activities include risk education and community liaison work that have positive indirect effects on clearance. NGOs train local teams who, in turn, teach local people how to recognize, avoid, and report hazards. The obvious benefit is saved lives. But local reporting also provides a massive boost in information collection and task prioritization. Further, NGOs gain community acceptance that can also have security benefits on the ground, particularly in countries that are suspicious of foreign people and organizations.



This primary school classroom bears the marking from the HRS clearance process.



Beneficiaries of NGO clearance. These children can now return to school after more than two years without formal education.

Based on the authors' experience in the commercial and HMA sectors, NGOs are far more cost-effective than for-profit companies. Because NGOs operate at lower costs, and because they actively work to build self-sustaining national capacity, the value per dollar and sustainability are much better. However, highly-capitalized commercial companies are more agile in initial deployment and redeployment than NGOs.

Quality management (QM) in HMA and commercial companies is extremely stringent. There are several tiers of internal QM, and generally the National Mine Action Authority or the United Nations Mine Action Service provides external QM. Security forces, on the other hand, do not have the time or resources to devote to clearance at these high standards.

The final strength of the NGO in this crisis is the value of the clearance to the community. NPA's mandate is to restore access, both directly to the people and to aid agencies trying to deliver assistance. Other NGOs have similar approaches that focus on how the IEDs impact communities in order to prioritize assistance with limited resources.

Looking Forward

HMA actors have been clearing improvised devices and conducting house clearance of booby traps for years. We continue to clear minefields with complex threats including anti-lift devices, tripwires, or mixes of UXO, landmines, cluster strikes, and improvised landmines. In each specific task, HMA organizations must analyze the threats and adjust their training, equipment, and skill set to meet the threat posed by the mix of devices in each location. In this sense, dealing with IEDs and improvised landmines is nothing new for HMA actors. What has changed in places like Iraq and Syria is the scale of the use of IEDs versus traditional factory-produced munitions. Due to the success of the APMBC and government efforts to improve physical security and stockpile reduction projects, the dwindling supply of anti-personnel landmines

and professionally-manufactured munitions available to insurgent groups appears to be a long-term trend that is here to stay. Without the open backing of a foreign government, the insurgents' most likely weapon in the future will continue to be improvised devices.

NPA and other NGOs have clearly demonstrated that HMA actors can play a role in IED clearance operations within the appropriate humanitarian context. The question is not whether HMA actors can address active command or timed devices, but whether it is appropriate given their humanitarian mandate. HMA NGOs can always adjust their capacity to respond appropriately to the threat posed by a device. The question of where an HMA actor can or cannot operate is not determined by the type of device but by the scenario in which the device is found in. Once the conflict is over, NGOs can move in and devote the months or years needed to return resources back to the communities as part of regaining normalcy after war. ©

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2. “The Protocol on Prohibitions or Restrictions on the Use of Mines, Booby-Traps and Other Devices Article 2: Paragraphs 1 and 3.” Protocol II, Convention on Certain Conventional Weapons, 1996 United Nations. Accessed 6 October 2017. <http://bit.ly/2fRGa8G>.
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